

Contrasting statistical indicators of Māori language revitalization: Conversational ability, speaking proficiency, and first language

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Is it possible to track the revitalization of the Māori language statistically? Different large-scale statistical collections (censuses and surveys) in New Zealand effectively have different definitions of speaker because they ask different questions. This paper compares trends in numbers of Māori speakers as estimated from responses to questions about conversational ability, first language, and level of speaking proficiency, with particular reference to the 2013 Census and Te Kupenga (Māori social survey) 2013. One might expect estimates based on these responses to align closely, but they do not. This paper explores the relationships between the different estimates for different birth cohorts. Data on first language from at least four surveys provide strong evidence of a resurgence in intergenerational language transmission, which is not clearly apparent from the other indicators. Patterns of response to conversational ability and speaking proficiency questions are found to vary according to first language and birth cohort. It is argued that the apparent inconsistencies between the indicators reflect the real complexity of revitalization processes, as well as varying interpretations of the language questions, and that the New Zealand census language question on conversational ability is of questionable value as an indicator for tracking Māori language revitalization.

1. Introduction¹

1.1 Questions about questions This paper seeks to critically analyse three types of language question which have been used in New Zealand censuses and surveys to identify speakers of the Māori language (*te reo Māori*), and the patterns of response to them: conversational ability, speaking proficiency, and first language learned as a child.²

¹This paper follows work the author did as a Senior Research Analyst at the New Zealand Ministry of Education, and the author is currently employed by the New Zealand Ministry of Health as a Senior Advisor, Analytics. However, the content of this paper has not been developed in the course of this employment and is not to be attributed to the Ministry of Education, the Ministry of Health, or the New Zealand Government: it remains the personal responsibility of the author.

²This paper builds on projects the author conducted while working at the New Zealand Ministry of Education: he would particularly like to thank his Ministry colleagues Mahina Melbourne, Ngaire Aben, David Earle, and Paul Satherley for support and feedback. His thinking on statistical indicators of Māori language revitalization has benefited from discussions with Atawhai Tibble and Scott Ussher in the project team responsible for Te Kupenga 2013 at Statistics New Zealand. He is grateful to Te Puni Kōkiri (the



There is a general issue in social research of what questions to ask to get the most informative responses, which applies in particular to assessing ethnolinguistic vitality, whether in qualitative, small-scale, or large-scale quantitative studies. The issue is particularly acute in censuses or surveys where there are limited possibilities for seeking clarification of responses. On the other hand, large-scale statistical data can provide evidence of variability in interpretations of particular questions and of variability in types of response.

Responses to census and survey questions typically provide partial information about an issue such as language revitalization, or information on a specific aspect, and statistics based on them can be regarded as statistical indicators, which provide a sense of the overall scale of the process. Responses to different questions lead to different indicators, which may reflect different aspects of the process, so that they produce different statistical patterns.

1.2 Intergenerational language transmission A key aim of language revitalization or reversing language shift (RLS) efforts is the restoration or reinvigoration of intergenerational language transmission. According to Spolsky (2005:68) this is simply what “revitalization” means. As Fishman (2001:458) puts it:

Ultimately, nothing is as crucial for basic RLS success as intergenerational mother-tongue transmission.

Given its importance then, it is crucial to have ways of gauging the degree of success of revitalization efforts in terms of achieving intergenerational language transmission.

A possible indicator of the extent of intergenerational language transmission is the number of people in a relevant population learning the language in question as a first language. This measures one aspect of intergenerational language transmission: it does not measure other aspects including the retention of the language into adulthood and use of the language within families, households, and communities.

In the case of the Māori language in New Zealand, statistics on first language speakers have only begun to be collected and reported relatively recently, in a way that could provide evidence of the progress of revitalization. More established indicators of language knowledge are conversational ability, which has been a topic in New Zealand censuses since 1996, and proficiency in speaking, understanding, writing,

Ministry for Māori Development) for permission to access the 2006 Health of the Māori Language survey data set while at the Ministry of Education in 2010, and to Ken Fink-Jensen of Research New Zealand for supplying the data set and advice on its interpretation. He would like to thank Winifred Bauer for raising questions about the statistical analysis of data on the Māori language, even though he has come to different conclusions. He is grateful to Statistics New Zealand (Stats NZ) for customized data licensed by Stats NZ for re-use under the Creative Commons Attribution 4.0 International licence, and in particular to Adele Bremner and Andrew McLaren at Statistics New Zealand for supplying customized data tables from the 2013 Census, Te Kupenga 2013, and the New Zealand General Social Survey 2016, as well as unidentified analyst(s) who supplied data on the use of census forms. He would also like to thank Paul Satherley at the Ministry of Education for sharing data from the Survey of Adult Skills 2014. An early version of this paper was presented at Sociolinguistics Symposium 22 in Auckland in June 2018: the author is grateful for questions and comments from Symposium participants. The paper has also benefited from detailed comments by Jeanette King and by two anonymous reviewers.

and reading, on which standard questions were introduced in the Health of the Māori Language (HML) Survey 2001.

1.3 The Māori language in surveys and censuses Māori are the indigenous people of New Zealand (*Aotearoa*). The 2013 New Zealand Census recorded 669,000 people with Māori ancestry and 599,000 who identified themselves as belonging to the Māori ethnic group out of a total population of 4,242,000 (Statistics New Zealand 2013b:Table 38). The Māori ethnic group is almost entirely a subset of the Māori descent group: only 4,000 people reported that they belonged to the Māori ethnic group but reported no Māori descent. Statistics New Zealand (2019a; 2019b) estimated the total Māori population as of 31 December 2018 as 745,000, 15.3% of the total population estimate at the same date of 4,883,000.

The Māori language belongs to the Eastern Polynesian subgroup of the Austronesian language family, a subgroup which also includes Cook Islands Maori, Tahitian, and Hawaiian. Following British colonisation in the 19th century and the imposition of English-medium education, there was a massive language shift in the Māori population from Māori to English in the first part of the 20th century (Benton 1997; Hardman 2018). Māori is classified as threatened in the *Ethnologue* (Eberhard, Simons, & Fennig 2019).

The first sociolinguistic survey of the Māori language was carried out by the New Zealand Council for Educational Research between 1973 and 1979, and reported in a series of publications (Benton 1979; 1981; 1991; 1997). The findings of this survey highlighted the extent of language shift from Māori to English in many Māori communities and in the Māori population as a whole, and helped to stimulate revitalization efforts which have been well reported in the language revitalization literature (e.g. Benton 1991; Benton & Benton 2001; King 2001; 2006; 2014; 2018; Spolsky 2003; 2005).

There is a somewhat chequered history of further surveys. The next sociolinguistic survey of the Māori language was the 1995 National Māori Language Survey (Te Puni Kōkiri n.d.), which was a survey of 2,441 Māori aged 16 and over, and produced results which were not comparable with subsequent studies.³ Meanwhile, census data on speakers of Māori became available due to the introduction of a language question to the New Zealand census in 1996. This question asked in which language or languages each person could “have a conversation about a lot of everyday things”. This CONVERSATIONAL ABILITY question has since been included with the same wording in subsequent censuses (i.e., in the 2001, 2006, 2013, and 2018 censuses⁴). One of the purposes of the census language question has been to monitor Māori language initiatives (see §3.2).

Statistics New Zealand followed the 2001 Census with the 2001 Health of the Māori Language Survey (HML 2001). This was a survey of 4,738 people aged 15 and over who had identified themselves as belonging to the Māori ethnic group in the census. This survey included questions on conversational ability (i.e., a repeat

³Apart from one set of figures referred to later in this section.

⁴The census due in March 2011 was delayed because of the Christchurch earthquake on 22 February 2011.

of the census question), proficiency in speaking, listening, reading, and writing, language spoken as a child, and questions on the use of Māori. HML 2001 effectively superseded the 1995 survey, which had not been based on a census.

A similar post-censal survey was not carried out after the 2006 Census. Instead, Te Puni Kōkiri (the Ministry of Māori Development⁵) commissioned market research company Research New Zealand to carry out the 2006 Health of the Māori Language survey (HML 2006) which surveyed 3,858 ethnic Māori aged 15 and over. Te Puni Kōkiri (2008) reported results on the status of the Māori language among Māori, and knowledge, acquisition, and use of Māori. Lacking access to census information identifying Māori, Research New Zealand used the Māori electoral roll as a starting point for sampling: this roll is known to have only partial coverage of the Māori population. This raised concerns about whether the results would be comparable with HML 2001 (and the later post-censal survey Te Kupenga 2013). Statistics New Zealand (2014a:6) comments:

The sample frame for this survey was very different from Te Kupenga 2013 and the 2001 HMLS (both post-censal surveys), because Research NZ did not have access to 2006 Census data to draw a sample from. Te Puni Kōkiri has now advised data users to exercise caution when interpreting results from the 2006 survey, due to limitations in the survey design (Te Puni Kōkiri 2008).⁶

Te Kupenga ('the net,' a metaphor for a gathering/collection) was a post-censal survey⁷ carried out by Statistics New Zealand following the 2013 Census, but it was not specifically a sociolinguistic survey; rather it was a broad-ranging social survey. Nevertheless, it did include a number of questions about language; these questions included one on proficiency in the four skills, and a question on first language learned as a child.

An explicit question on first language learned in childhood, based on one of the Canadian census questions, was incorporated in the Adult Literacy and Life Skills (ALL) Survey 2006. Variants of this question have since formed part of a number of other national surveys, including Te Kupenga 2013, the Survey of Adult Skills 2014, and the New Zealand General Social Survey 2016. These surveys provide a series of opportunities to critically analyze first language as an indicator of Māori language revitalization, and also opportunities to investigate how first language relates statistically to the earlier-established indicators of conversational ability and speaking proficiency.

⁵This government ministry is the successor to the former Department (later Ministry) of Māori Affairs.

⁶However, the HML 2006 data set was of high quality and included population weights to correct for biases in the sample, and when these weights are used, population estimates (e.g., for conversational ability) based on HML 2006 align well with the 2006 Census. On the other hand, the methodology and outputs of HML 2006 were not at all well reported.

⁷The sample for Te Kupenga was selected from people who had identified themselves in the 2013 Census as belonging to the Māori ethnic group and/or as having Māori ancestry. For comparability with other analyses, analysis of Te Kupenga in this paper is restricted to the Māori ethnic group subsample.

Table 1 summarises censuses and surveys to be referred to in this paper, and relevant reports or publications, and Table 2 shows which censuses or surveys included a question relevant to each of the three indicators.

The groups of people sampled from the New Zealand population in the surveys in Table 1 were not simple random samples, but were selected by “probability sampling” in a series of stages: first small geographical areas were selected, then households within areas, then individuals within households. The important point is that at each stage, the probability of selection (of area, of household, of individual) was known or could be calculated. This provides the basis for working backwards from the group of survey respondents in any category to a range of possible estimates of the corresponding population number, usually expressed as a best estimate and a margin of error. The complexity of multistage sampling in general means that the selection probabilities are different for different individuals interviewed in the survey, and for the reverse process of making population estimates, each individual respondent in the survey ends up effectively representing a particular number (the POPULATION WEIGHT for that individual) of people in the population. The population weights include adjustments for people selected for the survey but not interviewed, and for over- or under-representation of particular age and gender groups among the survey respondents (Groves et al. 2009; de Vaus 2014).

Where statistical data has been referred to in studies of Māori language revitalization, these statistics have largely been treated as taken-for-granted facts about the language: there has been very little critical attention to any ambiguities or issues of consistency of interpretation of these questions, with the exception of a paper by King (2006) which noted discrepancies between the 1996 Census and age-related responses in the 1995 National Māori Language Survey to a question similar to the census conversational ability question; and a report by Statistics New Zealand (2014a) discussed further below.

Noting apparent discrepancies between Māori conversational ability and speaking proficiency statistics from the 2001 and 2006 censuses compared with HML 2001 and 2006, Bauer (2008) put forward a critique of the speaking proficiency statistics from HML 2001 and 2006. Part of her analysis appears to be based on the expectation (erroneous, it is argued here) that the conversational ability and speaking proficiency questions should produce similar statistical patterns in terms of numbers of “speakers”, and accordingly that the censuses and surveys could not both be right. She rejected the survey results, treating the census results as definitive, and interpreting them as indicating a continuing decline in numbers of Māori speakers. Her critique focused more on issues of data collection methodology and reporting of the surveys, rather than critical analysis of the suitability of different language questions as indicators of revitalization.

This paper seeks to critically analyse three types of language question which have been used in New Zealand censuses and surveys, and the patterns of response to them: conversational ability, speaking proficiency, and first language. It builds on work by Statistics New Zealand (2014a) comparing the conversational ability and speaking proficiency indicators. It will focus initially on the indicators as reported in the 2013

Table 1. Censuses and statistical surveys including conversational ability, speaking proficiency, and/or first language questions

Census or survey	Year	Conducted by	Data collection method	Ethnic Māori sample (aged 15+)	Report / Publication(s)	Comment
Census	1996	Statistics NZ	Self-report, paper form	322,833		Sample = those stating a language
Census	2001	Statistics NZ	Self-report, paper form	325,404	Statistics New Zealand 2002	Sample = those stating a language
Health of the Māori Language survey (HML)	2001	Statistics NZ	Face-to-face interview	4,738	Statistics New Zealand 2002	
Census	2006	Statistics NZ	Self-report, paper/online form	359,289	Te Puni Kōkiri 2008; Bauer 2008; Lane 2011c	Sample = those stating a language
Health of the Māori Language survey (HML)	2006	Research New Zealand	Face-to-face interview	3,858	Te Puni Kōkiri 2008; Bauer 2008; Lane 2011c	
Adult Literacy & Life Skills (ALL) survey	2006	NZ Ministry of Education	Face-to-face interview	1,204	Lane 2011c	Aged 16–65
Census	2013	Statistics NZ	Self-report, paper/online form	390,438	Statistics NZ 2014a	Sample = those stating a language
Te Kupenga	2013	Statistics NZ	Face-to-face interview	5,006	Statistics NZ 2014a,b,c; Lane & Earle 2015	
Survey of Adult Skills (PIAAC)	2014	NZ Ministry of Education	Face-to-face interview	1,146	Jones & Satherley 2018	Aged 16–65
NZ General Social Survey (NZGSS)	2016	Statistics NZ	Face-to-face interview	1,130		

Table 2. Language questions in censuses and statistical surveys

Census or survey	Conversational ability	Speaking proficiency	First language
Census 1996	Yes	No	No
Census 2001	Yes	No	No
Health of the Māori Language survey (HML) 2001	Yes (asked in survey)	Yes	No
Census 2006	Yes	No	No
Health of the Māori Language survey (HML) 2006	Yes (asked in survey)	Yes	No
Adult Literacy & Life Skills (ALL) survey 2006	No	No	Yes
Census 2013	Yes	No	No
Te Kupenga 2013	Yes (Census 2013 responses for Te Kupenga respondents)	Yes	Yes
Survey of Adult Skills (PIAAC) 2014	No	No	Yes
NZ General Social Survey (NZGSS) 2016	No	Yes	Yes

Census and Te Kupenga 2013, and then on other data where they can shed light on interpretation of the questions.

These questions give rise to superficially contradictory response patterns, however, more detailed statistical analysis can start to resolve these apparent contradictions, and at the same time provide a more nuanced understanding of the progress of revitalization.

2. Birth cohort analysis Because of the importance of childhood language acquisition, it is useful and in fact necessary to analyse the three indicators of language revitalization by birth cohort, that is, those born once revitalization efforts were under way, compared with those born in earlier and later stages of decline as documented by Benton (1997).

An approximate characterization of the three cohorts for analysis is: Māori born in the 1950s or earlier, those born in the 1960s and 1970s, and those born in the 1980s and 1990s. Where analyses are based on data from Te Kupenga 2013, the cohorts are more specifically: those born up to 1958, those born from 1959 to 1978, and those born from 1979 to 1998, because in the data initially available for analysis (see Lane & Earle 2015) ages were aggregated into five-year age bands. The last

cohort finishes in 1998 because Te Kupenga was a survey of adults aged 15 and over in 2013.⁸

The three birth cohorts can be characterized broadly in the following ways:

- Those born up to 1958: a large proportion were born in rural areas, where, in general, Māori language was already in decline, but some rural communities were still largely Māori-speaking.
- Those born between 1959 and 1978: after large-scale urban migration (Metge 1964), many Māori were born in English-speaking urban areas, where the lack of children learning Māori as a first language became salient and sparked the beginning of revitalization movements.
- Those born from 1979 onwards: these young Māori were born and grew up during a burgeoning of Māori language revitalization movements, including Māori-immersion pre-schools (Kōhanga Reo) from 1982 on, and primary (elementary) schools (Kura Kaupapa Māori) from 1985 on (King 2001; 2018; Spolsky 2005:72–75; Olsen-Reeder, Hutchings, & Higgins 2017:18).⁹ Less well known have been the large number of Māori-medium or bilingual units in predominantly English-medium schools which have also been developed in this period, and have catered to a larger number of Māori students than the Māori-immersions schools: in 2013, there were 6,400 students in kura kaupapa Māori and 15,800 in classes in other types of school where 50 per cent or more of the instruction was through the medium of Māori (Lane & Earle 2015:16). The first census with information on this youngest cohort is the 1996 Census, and the first survey that included at least some of this cohort was HML 2001.

Because the Māori population is young and growing, the numbers in each birth cohort are quite different. The numbers of ethnic Māori in each cohort who stated at least one language in response to the conversational ability question in the 2013 Census were: 75,000 for the cohort born up to 1958, 139,000 in the 1959–1978 cohort, and 176,000 in the 1979–1998 cohort (Statistics New Zealand 2013b:Table 9). The cohort percentages in Figure 1 below are based on the 2013 Census and use the census totals.

These census numbers underestimate actual numbers of Māori for a number of reasons, including a proportion who were overseas at census time or for some other reason did not fill out a census form, and a proportion who did not respond to the language question. Statistics New Zealand calculates estimates of the total Māori population (by age and sex) which take account of these shortfalls. Results from the various surveys are scaled up to these population estimates, with adjustments for over- and under-representation of particular age and gender groupings. These

⁸Birth years are approximate because they are derived from age in 2013 and the survey took place between June and August 2013 (Statistics New Zealand 2014a:6).

⁹Kura Kaupapa Māori were established by Māori communities in 1985 without official recognition, but were officially recognized in 1989.

population estimates provide the most useful basis for comparing birth cohorts and for comparing the results of different surveys.

3. Conversational ability

3.1 The census question The conversational ability indicator refers to the language indicator in New Zealand censuses. In census forms¹⁰ from 1996 to 2013, the English version of the question has been:

Mark as many spaces as you need to answer this question. In which language(s) could you have a conversation about a lot of everyday things? Remember to mark English if you can have a conversation in English.
[These questions were followed by printed options that could be marked, for:]
English
Māori
Samoan
New Zealand Sign Language
Other language(s) [which had to be written in spaces provided]
None (for example too young to talk)

In relation to the Māori language, the census question thus provides just a binary (yes/no) choice.

3.2 Purpose and quality of census language data Statistics New Zealand (2013a) lists among the uses of the census language question “to formulate, target, and monitor policies and programmes that promote the use of Māori language”. Statistics New Zealand (2013a) has also assessed the language data based on the census conversational ability question as having “high” data quality, on the basis of experience over a number of censuses, and referring in particular to the 2013 Census language data, comments:

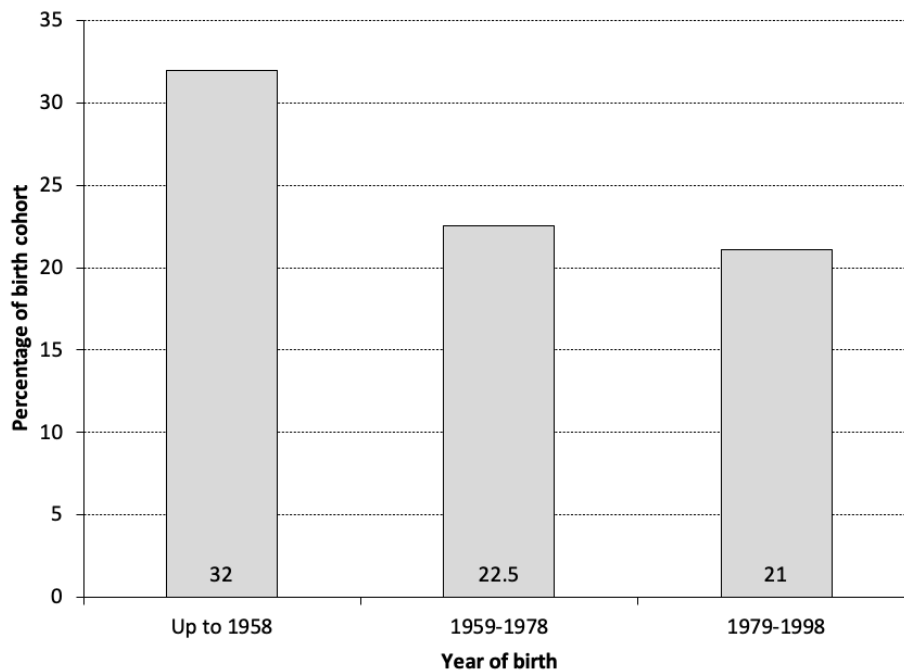
This data is fully comparable with the 2006 Census data. Changes in the data over this time period can be interpreted as real changes because there have been no changes in the way the data has been collected, defined, and classified.

3.3 Cohort analysis for 2013 The overall proportion of ethnic Māori aged 15 and over who reported conversational ability in Māori in the 2013 Census was 24% (based on Statistics New Zealand 2013b:Table 9). The percentage of each birth cohort reporting conversational ability in Māori in the 2013 Census is presented in Figure 1, which shows a decline from the oldest to the youngest cohort, but it is

¹⁰In the 2013 Census, two types of form were available: English-only and bilingual (Māori and English).

important to note that the extent of decline is much less between the middle and youngest cohort than between the oldest and middle cohorts. It is also important to note that the numbers reporting conversational ability are actually greatest in the youngest cohort because the total number of Māori is much higher in that cohort (the numbers reporting conversational ability are 24,000 of the 75,000 in the oldest cohort, 31,300 of the 139,000 in the middle cohort, and 37,000 of the 176,000 in the youngest cohort).

Figure 1. Percentage of each birth cohort with conversational ability in the Māori language, for the Māori ethnic group aged 15 and over (based on Statistics New Zealand 2013b:Table 9).



3.4 Cohort analyses for 1996, 2001, and 2006 Table 3 sets out similar cohort comparisons based on the 1996, 2001, and 2006 censuses,¹¹ and when compared with Figure 1 shows a decline between these censuses and the 2013 Census in the overall percentage reporting conversational ability in Māori, with the greatest within-cohort drop being the loss of speakers in the oldest cohort between 2006 and 2013.¹² Note that for each cohort the percentages across censuses in 1996, 2001, and 2006 are very similar to each other, and that for each census the pattern across cohorts is similar to that in 2013.

¹¹The dates defining the birth cohorts reflect the 5-year age bands in the published census data that the table is based on.

¹²A similar observation is made by King (2018:601).

Table 3. Percentages of each birth cohort reporting conversational ability in the Māori language in the 1996, 2001, and 2006 censuses, for the Māori ethnic group (Statistics New Zealand n.d.-a:Table 17; n.d.-b:Table 13a; n.d.-c:Table 9)

Census	Total across cohorts	Year of birth		
		Up to 1956	1957–1976	1977–1996
1996	26	39	22	23
2001	27	39	24	24
2006	26	38	25	23

3.5 Sensitivity of conversational ability question to context The conversational ability question was asked in the 2001 Census and repeated in the 2001 Health of the Māori Language survey, which was carried out two to three months after the census. Statistics New Zealand (2002:15) adopted the following procedure in the survey:

Respondents who had identified on their census forms that they could hold a conversation about everyday things in Māori were assigned a fluent interviewer. In other cases, if a respondent chose to complete the interview in te reo Māori, they were referred to a fluent speaker. [...] Sixty-three interviewers worked on the survey [...] Forty-six interviewers were fluent speakers.

Faced with a fluent Māori-speaking interviewer rather than a census form, 47% of those who had indicated in the census that they had conversational ability in Māori changed their response to the question, and now did not claim conversational ability (Statistics New Zealand 2002:30, Table 8b). Conversely, 7% of those who had not claimed conversational ability in the census (and so were less likely to have a fluent Māori-speaking interviewer in the survey) now claimed conversational ability in the survey: in fact, this group made up 25% of those who claimed conversational ability in the survey.

The presence of the fluent Māori-speaking interviewers can be understood as creating a different context from that of the census for responding to the conversational ability question. The impact of interviewer characteristics on survey responses is a known issue in survey analysis, referred to as an INTERVIEWER EFFECT (Groves et al. 2009:270–272).

In carrying out HML 2006, Research New Zealand did not have access to census data so could not select a sample of Māori from among census respondents, and could not know beforehand which Māori people had reported conversational ability in Māori. Thus Research New Zealand could not adopt the HML 2001 methodology of assigning fluent Māori-speaking interviewers on the basis of census responses. Hence there was not the basis for a similar interviewer effect in HML 2006.

On the other hand, HML 2006 included a conversational ability question with the same wording as the census except that Māori was the only language referred to.

The estimate¹³ (Lane 2011c) of the proportion of ethnic Māori aged 15 and over with conversational ability in Māori in HML 2006 was 26%, which agrees precisely with the 2006 Census proportion of 26%. This may indicate that the context in which the question was asked in HML 2006 was much more comparable with the census than the context in HML 2001. However, it is not possible to check the consistency of the conversational ability responses by individuals between the 2006 Census and HML 2006.

The extent of the interviewer effect in HML 2001 suggests that the conversational ability question is highly sensitive to context, and this in turn raises doubts about the suitability of this question as a basis for making comparisons between Māori in different contexts (e.g., between different subgroups of Māori or Māori in different time periods).

3.6 Interpreting the conversational ability question A general language question was included for the first time in the Census of England and Wales 2011. In the course of developing the form of this question, the United Kingdom's Office of National Statistics (ONS) undertook a qualitative study of potential questions, and considered a conversational ability question modelled on the New Zealand census question. The specific wording tested used *can* rather than *could*: "In which languages can you have a conversation about a lot of everyday things?" The Office of National Statistics (2009) reported on this question as follows:

Respondents generally considered "A lot of everyday things" to mean talking about domestic and day to day issues, such as housework, shopping, going to the doctor, the weather, car repairs and work, rather than being able to engage in complex discussions or any kind of technical or philosophical debate.

The choice of whether or not to record a language was ultimately influenced by what respondents considered to be the required level of proficiency in order to "have a conversation about a lot of everyday things". Testing identified that there were mixed opinions about the level of language ability required. The majority of respondents suggested that in relation to this question a relatively good to high standard of a language was necessary. For example:

"Which languages I can have a conversation in for some hours, about almost everything, [...] so in which languages I have a very good level." [...]

But other respondents thought that the level of ability required was more basic:

¹³This estimate was based on using the population weights provided in the HML 2006 data set, which adjust for biases in the initial sampling.

“[...] just if you can communicate perhaps say if you went somewhere on holiday and you knew a bit about the language, which perhaps if you could just get by really.” [...]

Reasons respondents gave for not reporting a language included that they were not fluent, or that they believed their ability was not of a high enough standard, including that they were not as proficient as they used to be [...]

[...] These findings indicate that asking this style of question would lead to the collection of inconsistent data.

The ONS decided not to use this question in the final form of the 2011 Census.¹⁴ There is quantitative evidence (see below) that Māori in New Zealand also have had a similarly wide range of interpretations of the conversational ability question. This wide range of interpretation gives scope for the conversational ability question to show considerable sensitivity to contextual factors such as the interviewer effect.

4. Speaking proficiency

4.1 The speaking proficiency survey question Statistics New Zealand (2002:11) introduced a question based on a five-point speaking proficiency scale (along with similar five-point scales for listening, writing, and reading) in HML 2001:

How well are you able to speak Māori in everyday conversation?

- 1 Very well (I can talk about almost anything in Māori)
- 2 Well (I can talk about many things in Māori)
- 3 Fairly well (I can talk about some things in Māori)
- 4 Not very well (I can only talk about simple/basic things in Māori)
- 5 No more than a few words or phrases.

This SPEAKING PROFICIENCY question has since been used in HML 2006, Te Kūpunga 2013, and NZGSS 2016.

Potaka & Cochrane (2004:295) describe the development of questions in HML 2001,¹⁵ and report 83% accuracy in self-ratings based on this scale when compared with ratings by an independent language assessor.¹⁶ They also comment on differences between first and second language speakers in their responses to draft versions of the language proficiency questions (296):

¹⁴The ONS instead chose two language questions, one on “main language” and one on English proficiency, which were also problematic in a number of ways (Sebba 2017).

¹⁵The author has not been able to find a published account of the development or any testing of the census language question. Statistics New Zealand (2013) rates the quality of the data collected using the census question as “high” on the basis of their experience with this question over a number of censuses.

¹⁶No further information is given in Potaka & Cochrane’s (2004) paper on this rating procedure.

[...] native speakers were consistently underrating their language ability, while second language learners were consistently overrating theirs. [...]

Where second language learners were more inclined to have adopted a European (Pākehā) cultural value, which encourages pride in individual achievement, native speakers were far more likely to display a cultural tendency amongst Māori where personal importance or ability is understated. This tendency was described by respondents in cognitive interviews as “not wanting to be whakahihi¹⁷”, or to appear “big-headed” about their ability.

Identifying this threat to a core objective early in the development cycle allowed designers to modify the proficiency scale to compensate for this effect.

Note that in terms of the birth cohort approach adopted here, HML 2001 had a small proportion in the youngest cohort (less than a ten-year age range). Potaka & Cochrane’s (2004) comments therefore refer mainly to subjects in the oldest and middle cohorts. Their observations also raise the possibility that there may be a difference between first and second language speakers in how they respond to the conversational ability question.

4.2 Speaking proficiency in 2013 As noted in Table 1, Te Kupenga 2013 was based on face-to-face interviews with Māori aged 15 and over, including a subsample of 5,006 who identified as belonging to the Māori ethnic group. The overall distribution¹⁸ of the five levels of speaking proficiency in Te Kupenga 2013 is shown in Figure 2.

For further analysis, the categories “Very well”, “Well”, and “Fairly well” will be aggregated into a single category representing HIGHER SPEAKING PROFICIENCY, as opposed to LOW SPEAKING PROFICIENCY, aggregating the other two categories. Aggregating the categories allows a more robust statistical analysis with smaller margins of error around estimates.

4.3 Cohort analysis for 2013 The three birth cohorts are compared in terms of the percentage of adult Māori who reported that they could speak Māori very well, well, or fairly well in Figure 3.

¹⁷conceited, arrogant’.

¹⁸The percentages are based on the population estimates obtained by scaling the survey sample up (on the basis of “population weights”) to the revised June 2013 estimate of 470,000 ethnic Māori aged 15 and over. Because of the complexities of the sampling, each survey respondent represents a different number of people in the population of interest: this is the “population weight” for that respondent. The point estimates for each percentage are labelled on the graph, and error bars in this and subsequent figures represent the margins of error at the 90% confidence level. Where the error bars do not overlap, the differences between the corresponding estimates are likely to be statistically significant at the standard 95% confidence level (Schenker & Gentleman 2001).

Figure 2. Speaking proficiency in the Māori language for the Māori ethnic group aged 15 and over (Te Kupenga 2013; Statistics New Zealand 2014b)

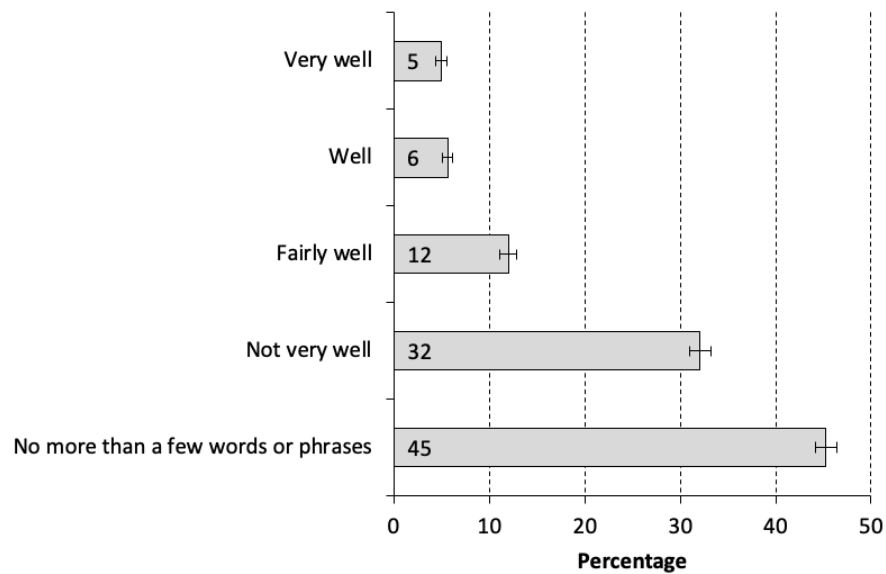
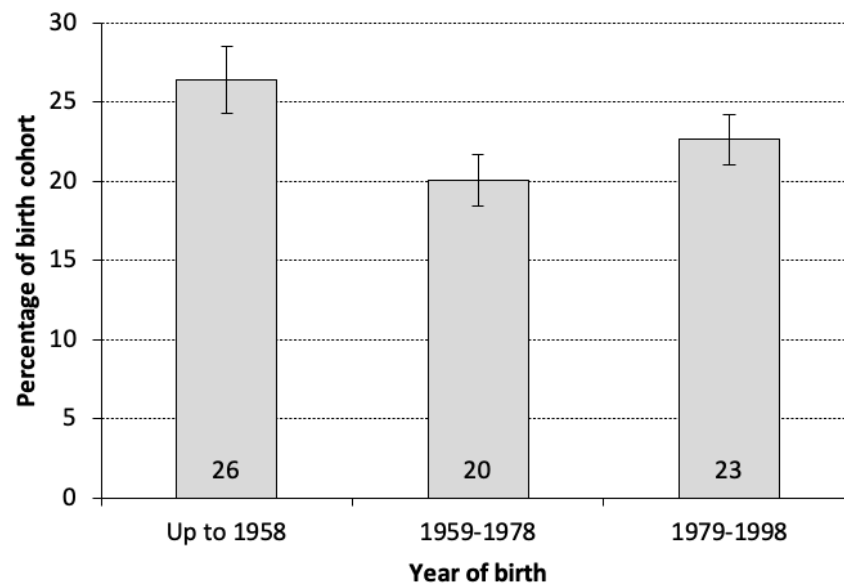


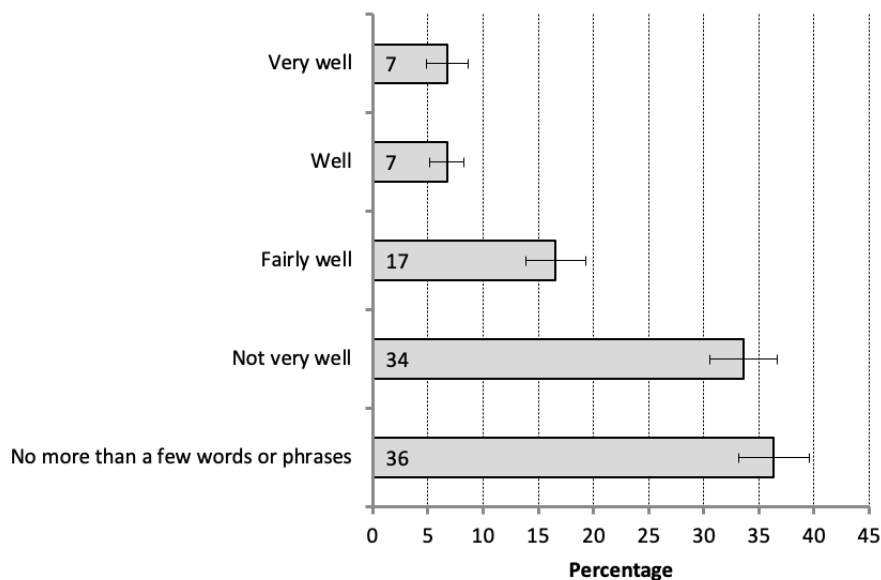
Figure 3. Percentage of each birth cohort with higher speaking proficiency in the Māori language, for the Māori ethnic group aged 15 and over (Te Kupenga 2013; Lane & Earle 2015:14)



The percentage of adult Māori with higher speaking proficiency in Māori was clearly greater in the oldest cohort than in the middle or youngest cohort. The estimated percentage was greater for the youngest than the middle cohort, but the margins of error around the estimated percentages mean that the difference between the two cohorts was not necessarily statistically significant. Thus the trend across cohorts for higher speaking proficiency initially appears compatible with the conversational ability trend in the 2013 Census; however, the two indicators will be compared in more detail below, to reveal some discrepancies between them.

4.4 Speaking proficiency in 2016 As noted in Table 1, NZGSS 2016 was based on face-to-face interviews with New Zealand residents aged 15 and over, and the Māori ethnic subsample was 1,130. Respondents to NZGSS 2016 were asked about their speaking proficiency in the Māori language using the same question as HML 2001 and Te Kupenga 2013. The population estimates based on NZGSS 2016 are expressed as percentages of Māori aged 15 and over in Figure 4. This and later figures are based on Statistics New Zealand customized data, that is, tables prepared by Statistics New Zealand analysts at the author's request (and cost).

Figure 4. Speaking proficiency in the Māori language for the Māori ethnic group aged 15 and over (NZGSS 2016; Statistics New Zealand customized data)



For each of the five levels of proficiency, given the margins of error, the percentages were not markedly different from those estimated from Te Kupenga 2013, except that the percentage reporting their speaking proficiency level as “Fairly well” was somewhat higher in NZGSS, while the percentage reporting their level as “No more than a few words or phrases” was considerably lower in NZGSS. When the levels are aggregated, those with higher speaking proficiency are estimated at 30% of Māori aged

15 and over (based on a population estimate of 143,000 with higher speaking proficiency), noticeably higher than the estimate of 23% with higher speaking proficiency from Te Kupenga 2013.

These differences may arise partly because of differences between the Māori samples in the two surveys, but are likely also due to the differences in the contexts of the two surveys, with Te Kupenga 2013 being very focused on Māori society and culture, and NZGSS 2016 having a broader New Zealand focus with relatively little specific reference to Māori. In other words, the speaking proficiency question shows signs of some sensitivity to context.

5. Comparing conversational ability and speaking proficiency

5.1 General comparisons Statistics New Zealand (2014a:18) comments on the similarity between the percentage of adult Māori reporting conversational ability in Māori in the 2013 Census and the percentage reporting higher speaking proficiency in Te Kupenga 2013:

There appears to be a good deal of agreement between the 2013 Census figure (23.7 percent) and those in Te Kupenga who said they could speak te reo Māori very well, well, or fairly well (22.6 percent).

However, this apparent agreement provides limited information: it could be achieved in many ways. All of the 22.6% who reported higher proficiency could have also reported conversational ability. Alternatively, in theory, the 23.7% reporting conversational ability and the 22.6% reporting higher proficiency could have been completely separate groups of Māori with no members in common. More likely there would be only partial overlap between the two groups.

When Statistics New Zealand (2014a:20) compared responses to the conversational ability question in the 2013 Census with responses by the same individuals to the speaking proficiency question in Te Kupenga 2013, the agreement did not appear to be particularly strong. The proportion of adult Māori who reported both conversational ability in Māori and higher speaking proficiency was 13.0%, while 9.7% reported higher speaking proficiency but not conversational ability, and 7.0% reported conversational ability but low speaking proficiency.¹⁹ This last category represents 35% of adult Māori reporting conversational ability in the 2013 Census, while the proportion of adult Māori who reported conversational ability in Māori in the 2001 Census and then reported low speaking proficiency in HML 2001 was 47% (Statistics New Zealand 2014a:19).

HML 2006 included a conversational ability question about the Māori language, following the wording of the census question, as well as the same speaking proficiency question as HML 2001 and Te Kupenga 2013.²⁰ In HML 2006, the proportion of

¹⁹Note that the percentages for conversational ability add to 20%, which is the proportion reporting conversational ability based on the sample in Te Kupenga 2013, rather than 23.7%, which is the proportion reporting conversational ability in the Census. This is an example of how a survey sample may not completely match a census in terms of proportions.

²⁰Note that the sample for HML 2006 was not selected from 2006 Census respondents.

adult Māori with conversational ability in Māori who reported low speaking proficiency was 23% (Lane 2011c). This proportion may be lower than the corresponding proportions in 2001 and 2013 because in 2006 the two questions were asked in the same survey rather than months apart in two different statistical projects.

Statistics New Zealand (2014a:20) compared the conversational ability and speaking proficiency responses on the basis that the census, i.e., conversational ability responses, were “correct”. An argument for treating these responses as “correct” could be that the census effectively has a much bigger sample than the various surveys, which reduces its sampling error. However, the issue of the ambiguity of the question and varying responses to it is not a sampling issue, and asking a larger number of people doesn’t resolve it.

If on the other hand we assume that the five-point speaking proficiency scale allows respondents to locate their level of ability not necessarily perfectly, but more accurately than the two-level conversational ability question, then it makes more sense to treat the number or percentage who reported speaking Māori very well, well, or fairly well as the “correct” figure and the conversational ability figures as problematic.

This approach is consistent with the view of Arel (2002:98), in a study of language questions in a large number of censuses:

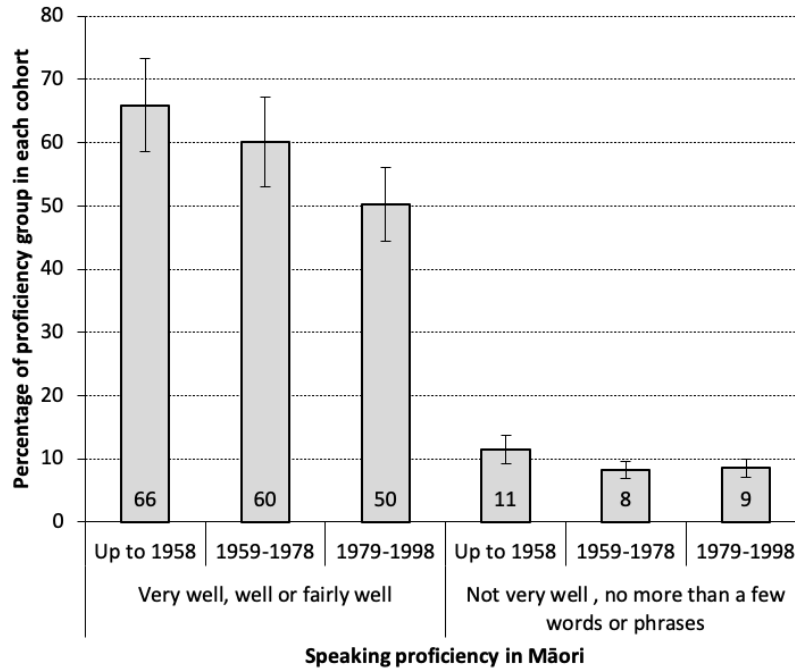
Census results regarding knowledge of a language have often been criticized as of questionable validity, since people may exaggerate their actual fluency in a language. Even when true, however, the ungrounded claim of fluency [...] in itself constitutes a significant sociological fact [...] Validity is increased when fluency in a language is assessed in gradation (e.g. speaks well, with difficulty, not at all) for specific acts (reading, writing, speaking, comprehension)

5.2 Cohort analysis of conversational ability by speaking proficiency One way of looking at the relationship between the conversational ability and speaking proficiency indicators is to see what proportion of those with higher and low speaking proficiency reported conversational ability: this view is displayed by birth cohort for 2013 data in Figure 5.

Figure 5 indicates that there is a fairly rough agreement between the two indicators, although only about half of those reporting higher speaking proficiency in the youngest cohort claimed conversational ability, considerably less than the two-thirds of those with higher speaking proficiency in the oldest cohort. The proportion of those with low proficiency who reported conversational ability points to an ambiguity in the conversational ability question, in line with the comments of subjects in the UK Office of National Statistics (2009) qualitative study. “Conversational” language is often understood to mean informal or casual language (Sinclair 1995:358) and it may be this interpretation of “conversation” that these responses are based on.

However, because the low proficiency group was the great majority (77%) of adult Māori, the small subset of this group who reported conversational ability represented a relatively large group among those reporting conversational ability.

Figure 5. Percentage of each speaking proficiency group in each birth cohort reporting conversational ability in the Māori language, for ethnic Māori aged 15 and over (2013 Census and Te Kupenga 2013; Statistics New Zealand customized data)



Note that the Māori version of the census conversational ability question (*He aha ngā reo e taea e koe te kōrero e pā ana ki ngā kaupapa māmā noa iho?*) can be translated as ‘In which languages can you speak about simple/basic topics?’ In so far as this version leans somewhat more towards a low proficiency interpretation of the question than the English version, respondents who reported low proficiency in Te Kupenga and who had answered the Māori version of the census question were potentially more likely to have reported conversational ability than those who answered the English version. However, statistics are not available for the numbers who responded to the Māori version of the question: the nearest approximation is the numbers who responded using bilingual Māori/English census forms (including online forms)²¹ rather than English-only forms (there were no Māori-only forms).²² In the 2013 Census overall, 19% of ethnic Māori aged 15 and over who reported conversational ability in Māori responded using a bilingual form (25% of the oldest cohort, 17% of the middle cohort, and 16% of the youngest cohort), and conversely

²¹In the 2013 Census, online forms made up 34% of the submitted census forms. The default version of the online form was in English, but the user could switch to the Māori version. However, only 0.5% of online forms were completed in Māori (Statistics New Zealand 2014e.)

²²In spite of the status of Māori as a legislated official language of New Zealand since the passage of the Maori Language Act 1987, it is still unusual to have the option of completing an official form in Māori, and doing so requires a special determination not to use the default language for this activity, namely English.

34% of ethnic Māori aged 15 and over who responded using a bilingual form reported conversational ability in Māori (44% of the oldest cohort, 30% of the middle cohort, and 30% of the youngest cohort). These figures (derived from Statistics New Zealand customized data) indicate that the relatively high proportion of low proficiency speakers in the oldest cohort reporting conversational ability may relate to a greater proportion answering the Māori version of the question. On the other hand, there is no substantial difference between the middle and youngest cohort in the use of bilingual forms, and no substantial difference between these two cohorts in the extent to which low-proficiency speakers reported conversational ability.

Figure 6 shows the proportions of adult Māori in each birth cohort falling into three groups: those reporting higher proficiency but not conversational ability, those reporting both higher proficiency and conversational ability (the aligned response group), and those reporting low proficiency but conversational ability.

Figure 6. Combinations of Māori conversational ability and speaking proficiency responses as percentages of each Māori birth cohort (2013 Census and Te Kupenga 2013; Statistics New Zealand customized data)

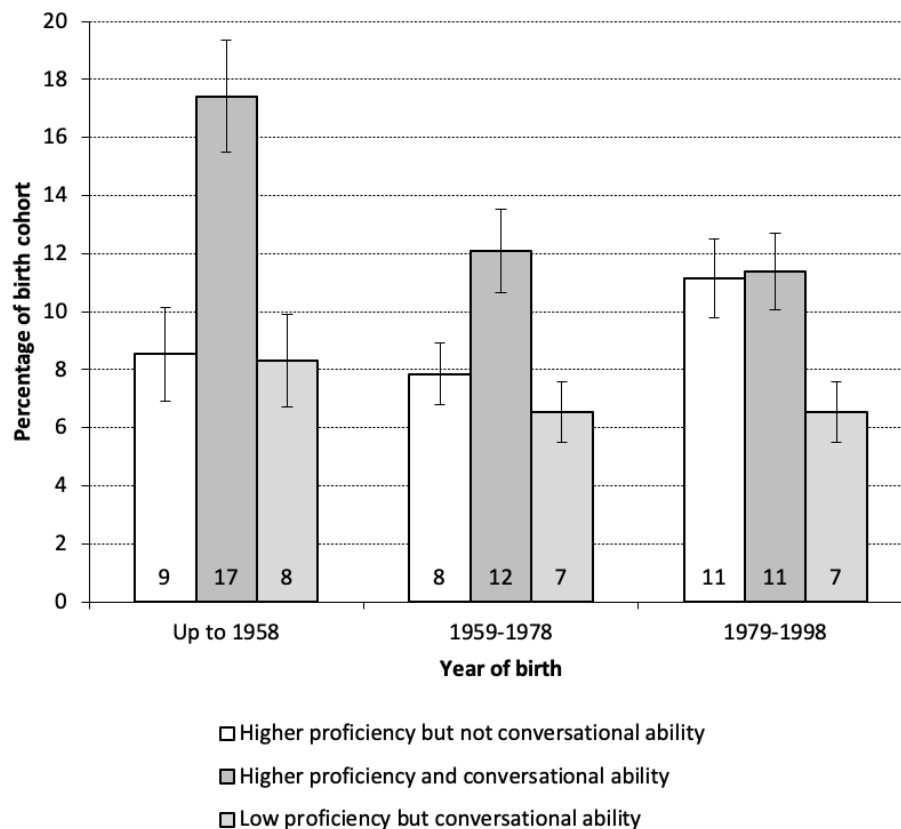


Figure 6 shows the extent of alignment between responses to the conversational ability and the speaking proficiency questions. For the oldest and middle cohort, the aligned combination represented the clear majority of responses, while the percentages of the two kinds of non-aligned responses were similar and in effect balanced each other out. For the youngest cohort, however, the percentage of those reporting higher speaking proficiency but not conversational ability was comparable with the percentage with aligned responses, while both of these percentages were clearly greater than the percentage of those with low proficiency but conversational ability: overall the correspondence between responses to the two questions was particularly weak for this cohort.

Thus the relationship between the two indicators is different for the different birth cohorts. If the conversational ability question is taken to be “correct” in some sense (as per Statistics New Zealand 2014a:20) then the youngest cohort would appear to be over-reporting their speaking proficiency; but if the five-level speaking proficiency scale is taken to elicit more accurate responses (as suggested above) then the youngest cohort appears to be under-reporting their conversational ability: in this case the conversational ability indicator is not consistent across cohorts. This under-reporting interpretation is broadly consistent with the interviewer effect observed in HML 2001, i.e., although in Te Kupenga 2013 the youngest cohort members were not likely to be confronted with an interviewer more proficient in the Māori language, they were more likely to be aware of other members of their own generation who may have greater proficiency (first-language speakers, Māori-medium graduates) as well as having been exposed to young proficient speakers in Māori broadcast media – radio stations from 1987 and Māori television from 2004 (Hutchings et al. 2017; Olsen-Reeder, Hutchings, & Higgins 2017; King 2018).

King (2014) distinguishes two generations of Māori adults involved in revitalization of the Māori language, which she calls Generation 1 (218):

the first generation of Māori parents since the development of language revitalization initiatives to be involved in raising their children as speakers of Māori.

Generation 1 adults have made a personal and conscious decision to engage with the Māori language.

and Generation 2 (220):

the second generation of adults to be involved in revitalization of the Māori language: the offspring of Generation 1 adults. These are the foundation generation of young children [...] the focus of *kōhanga reo*. Even if these young adults, referred to here as Generation 2, have not personally participated in *kōhanga reo* and Māori language immersion schools and programmes, they have grown up in an environment where these initiatives have existed. That is, their experience is quite removed from the idealism and protest stages of language revitalization that were the cornerstone of the experience of Generation 1 adults.

King's Generation 1 would largely belong to the middle of the three birth cohorts referred to in this paper, and Generation 2 to the youngest cohort. Her observation of these generations' different perspectives on language revitalization is based on small-scale qualitative research, but the results reported here indicate that such generational differences are widespread enough to have an impact on statistical estimates at the national level.

6. First language There have been a number of surveys which have included a question on the first language learned as a child. Variations between surveys in wording and interview protocols have led to different estimates of numbers of speakers, but the key point is that the surveys all show an increase in the percentage of first language speakers in the youngest cohort compared with the middle cohort. The four surveys analysed in the following sections span a ten-year period in terms of when the data was collected: ALL 2006, Te Kupenga 2013, PIAAC 2014, and NZGSS 2016.

6.1 Adult Literacy and Life Skills (ALL) survey 2006 The Adult Literacy and Life Skills (ALL) survey was an international survey focused on literacy, numeracy, problem solving skills, education, and employment, in which 12 countries and one Mexican state took part. In New Zealand, the survey was based on face-to-face interviews in respondents' homes, and included assessments of respondents' literacy and numeracy skills in English.²³ Given that knowledge of English was a pre-requisite for such assessment, the survey included two questions on language background: one on first language and one on language used at home. The survey was co-ordinated by Statistics Canada, and the wording of both language questions was taken from the Canadian census.

The wording of the first language question in ALL 2006 was: "What is the language that you first learned at home in childhood and still understand? (Mark one only unless two languages were learned at precisely the same time)".

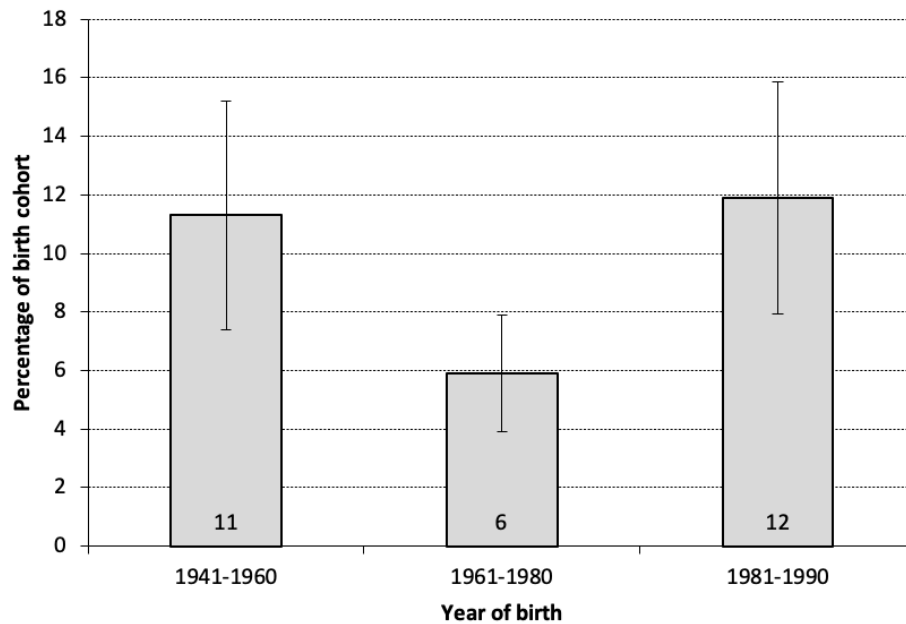
The ALL survey had a Māori subsample of 1,204 and provided an estimate of 28,400 Māori people who had Māori as a first language in the 2006 population aged 16 to 65. The standard statistical margin of error (at the 95% confidence level) on that estimate is 5,600, which means that it is probably safer to say that somewhere between 22,800 and 34,000 Māori people aged 16 to 65 were estimated to have Māori as a first language in 2006. In percentage terms, ALL 2006 provided an estimate of 9% of Māori aged 16 to 65 who spoke Māori as a first language, or taking into account the margin of error, between 7% and 11%.

ALL 2006 showed a definite rise in the percentage of Māori with Māori as first language among those born after 1980, as shown in Figure 7.

The difference in percentage of first language speakers between the middle and youngest cohort is only just great enough, given the margins of error, to be confident that the difference is genuine and not a statistical accident.

²³The ALL survey in New Zealand was extensively studied and reported on. See, for example, Satherley & Lawes 2008; Earle 2009; Lane 2011a; 2011b.

Figure 7. Percentage of ethnic Māori in each birth cohort with the Māori language as first language (ALL 2006; Lane 2011c)



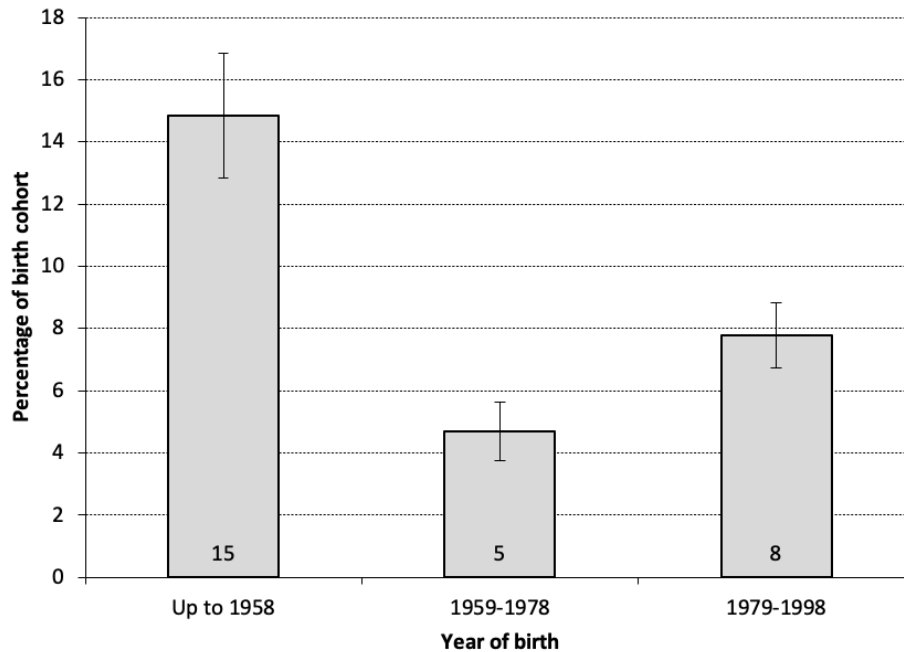
These findings were included in an unpublished report to the Ministry of Education (Lane 2011c), which subsequently came to the attention of the team designing Te Kupenga (Māori social survey) in Statistics New Zealand, who included a modified version of the ALL survey first language question in the questionnaire for Te Kupenga.

6.2 Te Kupenga 2013 This was a survey of Māori, focused on culture and well-being. As noted in Table 1, Te Kupenga 2013 was based on face-to-face interviews with Māori aged 15 and over, including a subsample of 5,006 who identified as belonging to the Māori ethnic group. The first language question in Te Kupenga 2013 was worded “Now thinking about languages that you may be familiar with, what is the language that you first learned in childhood and that you still understand?” In contrast to ALL 2006, allowance was made for only one language to be recorded: this will be referred to here as the SOLE FIRST LANGUAGE (SFL).

Te Kupenga provided an estimate of 38,000 (with a margin of error of 4,000) sole first language speakers of Māori aged 15 and over: 13,000 in the oldest cohort, 8,000 in the middle cohort, and 17,000 in the youngest cohort (Statistics New Zealand 2014c:8; Statistics New Zealand customized data). In percentage terms, 8.0% of ethnically Māori adults were estimated to be sole first language speakers, with a margin of error of 0.8%.

Figure 8 shows a statistically significant increase in the percentage of sole first language (SFL) speakers of Māori between the middle and youngest cohorts. This provides strong evidence of a resurgence in intergenerational language transmission between the two cohorts.

Figure 8. Percentage of ethnic Māori in each birth cohort with the Māori language as sole first language (Te Kupenga 2013; Statistics New Zealand customized data)

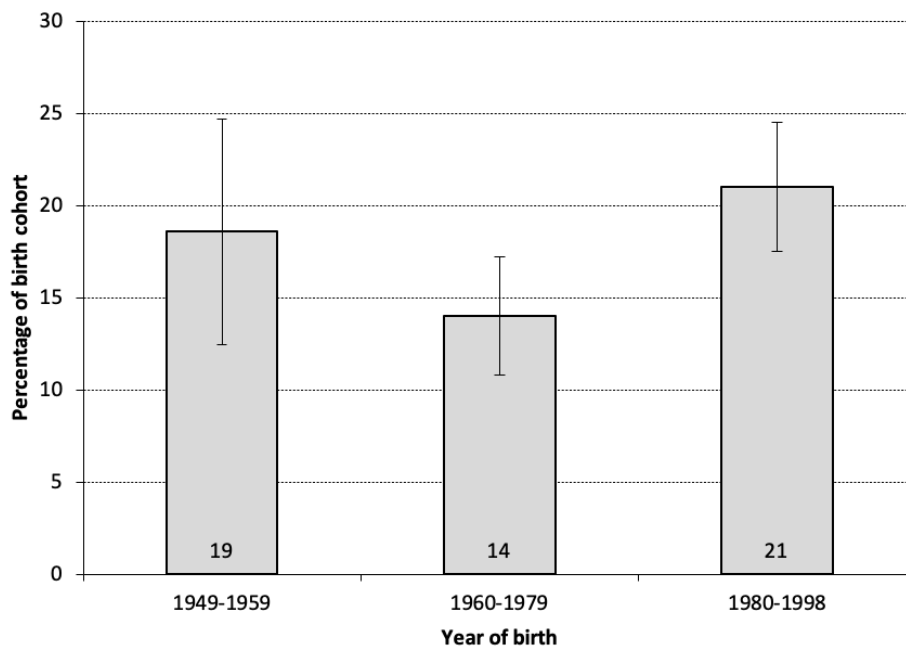


6.3 Survey of Adult Skills (PIAAC) 2014 This survey of the New Zealand working-age population focused on English literacy, numeracy, technological skills, education, and employment and was a successor to ALL 2006. It was the New Zealand implementation of a survey coordinated by the Organisation for Economic Cooperation and Development (OECD), known as the Programme for International Assessment of Adult Competencies (PIAAC). As noted in Table 1, PIAAC 2014 was based on face-to-face interviews with respondents aged 16 to 65, including a subsample of 1,146 who identified ethnically as Māori. The basic wording of the first language question in PIAAC 2014 was the same as that in ALL 2006, namely “What is the language that you first learned at home in childhood and still understand?” As in ALL 2006, respondents were allowed to nominate up to two first languages; but they were not subject to the restriction to first languages “learned at precisely the same time” that applied in ALL 2006. Rather, interviewers in PIAAC were instructed to record an additional first language if the respondent “spontaneously mentions TWO languages” (OECD n.d.).

PIAAC 2014 provided an estimated total number of first language speakers aged 16–65 of 67,000, with a margin of error of 10,000, or in percentage terms, 18.0% of ethnic Māori aged 16–65, with a margin of error of 2.6%. The subset of sole first language speakers was estimated at 28,000, or 42% of first language speakers, and the subset with Māori as one of two first languages at 39,000, or 58% of first language speakers.

Figure 9 shows the analysis of the percentages of first language speakers in each birth cohort, and indicates that there was a significantly greater proportion of first language speakers in the youngest cohort than in the middle cohort.

Figure 9. Percentage of ethnic Māori in each birth cohort with Māori as a first language which is still understood (PIAAC 2014; Ministry of Education data)



Jones & Satherley (2018:40–41) comment on the difference between PIAAC 2014 and Te Kupenga 2013 in estimates of the percentage of adult Māori with a *reo Māori* background (meaning having Māori as their first language and/or main home language):

Using the same age bands, the two sources give different proportions of Māori that have a *reo Māori* background – 8.5% according to Te Kupenga and 18% according to the Survey of Adult Skills. The main reason for the difference will be that the Survey of Adult Skills provides for recording two first learned languages.

Other reasons may include:

- » the different contexts and purposes of the two collections influencing differential responses from people in the same situations
- » sampling errors.

6.4 New Zealand General Social Survey 2016 The New Zealand General Social Survey (NZGSS) 2016 was a survey of the New Zealand resident population aged 15 and over, focused on wellbeing and a broad range of social indicators. As noted in Table 1, NZGSS 2016 was based on face-to-face interviews with respondents, including a subsample of 1,130 who identified ethnically as Māori. It included a variation on the first language question used in Te Kupenga. Respondents were first asked “What is the language that you first learned in childhood?” and up to five responses were allowed for. This question was followed up with “Do you still understand [that language/any of those languages]?” and then, in the case of multiple first languages, “Which ones?”

NZGSS 2016 provided an estimate of the total number of first language speakers of Māori aged 15 and over of 90,000, with a margin of error of 15,000, or in percentage terms, 18.8% of ethnic Māori aged 15 and over, with a margin of error of 3.2%. The subset of sole first language speakers was estimated at 37,000, or 41% of first language speakers, and the subset with Māori as one of multiple first languages at 53,000, or 59% of first language speakers. A very small number of first language speakers indicated that they could no longer understand Māori as adults, but it is not possible to provide an accurate population estimate of this group.

Figure 10 shows a comparison between birth cohorts in terms of the percentages of first language speakers, and as with PIAAC 2014, the percentage in the youngest cohort is clearly greater than that in the middle cohort. Note that the youngest cohort extends to 2001, three years beyond the corresponding cohort in the analyses of Te Kupenga 2013 and PIAAC 2014.

The difference in numbers and percentages of first language speakers between Te Kupenga 2013, PIAAC 2014, and NZGSS 2016 is striking, and is likely due to respondents to Te Kupenga being restricted to a single first language response, while respondents to PIAAC 2014 and NZGSS 2016 could report multiple first languages. However, the estimates for the number of sole first language speakers aged 15 and over are similar: 38,000 in Te Kupenga 2013 and 37,000 in NZGSS 2016.

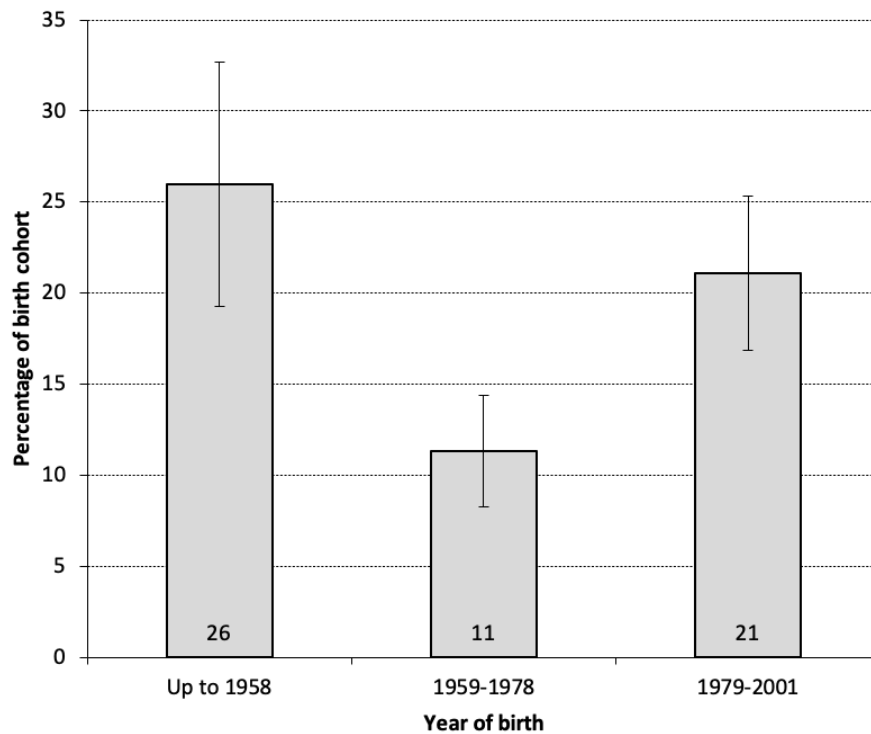
6.5 Other indicators of first language

6.5.1 Survey of Language Use in Māori Households and Communities 1973–1979 The ALL 2006 survey was not the first to ask about first language. Adult respondents to the Māori sociolinguistic survey conducted by the New Zealand Council for Educational Research between 1973 and 1979 were asked if Māori was their first language (Benton 1997:15):

In our survey, information about first language was collected only from those people who were interviewed directly – 6915 adults, almost all of whom were over the age of 20.

The 6,915 survey respondents therefore fall almost entirely into the oldest of the three birth cohorts, i.e., those born up to 1958. Of these respondents, 2,860 (41%) were sole first language speakers of Māori who were “fluent” speakers as adults, while 195 (3%) were first language speakers of both Māori and English who were “fluent” speakers as adults. The lower percentages of first language speakers in this cohort in the later surveys attest to the loss of many older first language speakers in this cohort through mortality.

Figure 10. Percentage of ethnic Māori in each birth cohort with Māori as a first language which is still understood (NZGSS 2016; Statistics New Zealand customized data)



Although the survey did not provide data on child first language speakers, Benton (1997:24) makes the following comments about children’s proficiency in the Māori language:

Only 170 out of 4090 households where the youngest child was still resident rated the child as fluent; another 152 households had a youngest child who could understand Maori fairly well, but had limited ability to

speak the language in comparison with their fluency in English. Even added together, the proportion of households with proficient and semi-proficient Maori speakers as the youngest member of the new generation came to less than eight percent.

These comments relate to proficiency rather than first language, and counts are of households rather than individuals, but if we nevertheless take these figures as approximate estimates of the proportion of child first language speakers in the 1970s, i.e., in the middle cohort, we have a range from 4.2% (170 out of 4,090) to 7.9% (322 out of 4,090), which is very close to the range of first language estimates for the middle cohort in ALL 2006 (see Figure 1) and is consistent with the estimated range in Te Kupenga 2013 (see Figure 2). It is also compatible with the estimated range in NZGSS 2016, though somewhat lower than the estimated range in PIAAC 2014.

6.5.2 Te Ahu o te Reo 2015 Te Ahu o te Reo (Hutchings et al. 2017) was designed as a follow-up to the 1970s NZCER sociolinguistic survey, and as with that survey, was focused on gauging the extent of knowledge and use of the Māori language in specific Māori communities: Te Ahu o te Reo was carried out in nine communities varying from large urban to small rural communities and with a wide geographical range. These communities were in localities studied in the 1970s survey, but given the 40-year time difference, the composition of the communities was not necessarily comparable with that in the earlier survey. Rather than seeking a statistically representative sample of all adult Māori, Te Ahu o te Reo targeted Māori with some level of involvement in Māori language revitalization.

Hutchings et al. (2017:xvi) report that:

In all of the communities involved in Te Ahu o te Reo, there were some whānau (kaumātua, mātua and tamariki)²⁴ who were frequently using te reo Māori inter- and intra-generationally.

Within those whānau, adults were most likely to speak te reo Māori with tamariki, and tamariki were most likely to speak te reo Māori with their parents. [...]

These are encouraging signs for te reo Māori maintenance and revitalization, particularly since intergenerational use is now occurring in communities such as Christchurch, Taranaki, West Auckland and South Auckland where intergenerational transmission of the language had effectively ceased in 1975.

6.6 Summary of first language statistics There have now been at least four national surveys showing broadly the same result: a significant increase in the percentage of ethnic Māori with Māori as first language between the middle and youngest cohort.

²⁴Extended families (elders, parents, and children)'. *Whānau* commonly includes aunts, uncles, and cousins, but has a wide range of interpretation among Māori (see Statistics New Zealand 2014b).

However, the NZGSS 2016 result shows that knowledge of the language is not necessarily maintained into adulthood.

The surveys differ in purpose and sampling; one (Te Kupenga 2013) was a survey of Māori only, focusing on Māori culture and wellbeing, while ALL 2006, PIAAC 2014, and NZGSS 2016 were surveys of the general population: ALL and PIAAC focused on English literacy, numeracy, and other skills, and education and work, and NZGSS focused on social participation and wellbeing. There were also some variations between these surveys in the wording of first language questions. The fact that similar trends are evident in spite of this heterogeneity provides robust evidence of these trends.

In particular, the trend for greater percentages of first language speakers in the youngest compared with the middle cohort is evident across the surveys, even though the estimated numbers of first language speakers vary considerably according to whether a particular survey forced respondents to choose a single first language (as Te Kupenga did) or allowed that respondents may have more than one first language (as PIAAC 2014 and NZGSS 2016 did, and as ALL 2006 did though in a restricted way). Note that none of the surveys which include first language questions has had an ideal approach to multiple first languages, since all the first language questions are asked in the singular, so that respondents with multiple first language have to present themselves as exceptions to the presumption of one first language inherent in the wording of the question. As a result, the total number of first language speakers of Māori may be underestimated in all the surveys.

There is a marked difference between the estimates for total numbers of first language speakers aged 16 to 65 between the 28,400 estimated from ALL 2006 and the 67,000 estimated from PIAAC 2014, despite the two surveys using the same basic first language question. Part of this difference was to be expected given that the PIAAC sample includes Māori born between 1991 and 1998 who were not included in ALL 2006, and given the increased proportion of first language speakers in the youngest cohort. However, the increased numbers of young first language speakers cannot entirely account for the difference. The other likely explanation is the restriction in ALL 2006 on claiming two first languages, which probably discouraged a number of respondents from reporting two first languages, or alternatively as Satherley²⁵ (personal communication, December 3, 2018) puts it:

would likely have led interviewers to check that two languages that a respondent reported were learnt simultaneously, and perhaps not record a language if the respondent didn't assert clearly that they were learnt at exactly the same time. The PIAAC interviewer instruction seems slightly less restrictive and probably wouldn't generate so much of this interaction where a respondent reported two languages.

Thus the estimate from ALL 2006 is likely to be closer to that for sole first language speakers than total first language speakers. From this point of view, the ALL 2006

²⁵Paul Satherley has been the New Zealand Ministry of Education project manager for both ALL 2006 and PIAAC 2014.

estimate is possibly better compared with the estimate of 28,000 sole first language speakers in PIAAC 2014, in which case there is not a major difference between the two surveys.

The ALL 2006 and PIAAC 2014 first language questions both ask for the language “first learned at home in childhood”, which clearly targets those who have learned the language in the home and family context. Those who reported Māori as their first language in these two surveys thus do not fit the concept of “new speakers” put forward by O’Rourke, Pujolar, & Ramallo (2015:1), as those

with little or no home or community exposure to a minority language but who instead acquire it through immersion or bilingual programs, revitalization projects or as adult language learners.

The first language questions in Te Kupenga 2013 and NZGSS 2016 did not include the phrase “at home”, but this absence appears not to have made a difference to the numbers of first language speakers, given that the number of first language speakers in Te Kupenga 2013 can be reconciled with that in ALL 2006, and the number in NZGSS 2016 can be reconciled with that in PIAAC 2014.

O’Rourke, Pujolar, & Ramallo (2015) argue that language revitalization studies in Europe have focused on “native speakers” and “heritage speakers” to the neglect of “new speakers”, who need to be recognized and whose profile needs to be raised in order to develop a comprehensive account of revitalization. For Māori in New Zealand, there is a converse issue. “Native speakers” have been equated with an older generation that is being lost, and younger proficient speakers have been assumed to be “new speakers” as defined in the quote above. In her extensive review of literature to 2015 on perceptions of the health of the Māori language, Hardman (2018:30) states:

Fishman’s (1991) advice is to focus on intergenerational transmission in the home. For Māori, this refers to the “use of te reo Māori at a whānau²⁶ level [...] by the Māori speaking population in the home and in the community” [Te Puni Kōkiri 2009]. Ideally, this would mean children who are living at home have opportunities to communicate in te reo Māori with their mātua and kaumātua²⁷ on a regular basis. The reality seems to be that these opportunities are not occurring.

Hardman gives no specific citation for this claim: rather, it reflects an absence of young first language speakers of Māori in the academic revitalization literature between the reports of the 1970s NZCER survey and some recent work: Lane & Earle (2015:9–18) and Hutchings et al. (2017:38–40) are among the first to report their existence. This long absence is partly to do with the questions asked in surveys: no one appears to have asked young Māori about their first language until ALL 2006. The consequent lack of information about young first language speakers appears to have been interpreted as evidence of absence.

²⁶Extended family: see footnote 24.

²⁷Parents’ and grandparents’ generations.

The different surveys that have now asked about first language have recognized young Māori native speakers in the traditional sense of those having a singular, clearly identifiable first language established before becoming “new speakers” of English, as well as an apparently larger group reporting both Māori and English as first languages; this dual first language group being perhaps intermediate between native speakers in the traditional sense, and O’Rourke, Pujolar, & Ramallo’s (2015) “new speakers”. Identifying these different types of first language speaker also paves the way for a clearer focus on the “new speakers” of Māori who are still an important force in the revitalization process.

The resurgence of intergenerational language transmission indicated by the first language statistics is strongly associated with Māori-medium education (Statistics New Zealand 2014c:17; Tangaere 2014). Te Kupenga 2013 included questions on whether respondents had been enrolled in *kōhanga reo*, *kura kaupapa Māori*, or *wharekura*.²⁸ In the youngest cohort, 80% of sole first language speakers had been enrolled in one or more of these, and these sole first language speakers accounted for 24% of those who had attended one or more of these institutions (Lane & Earle 2015:16). Hutchings et al. (2017:54) comment on this relationship:

In several communities, adults named specific *kura*, *Kōhanga Reo* and *Puna Reo*²⁹ that supported *whānau reo* Māori.³⁰ They said that “pockets of regeneration” had grown up around these Māori language revitalization hubs.

The close involvement of young first language speakers with Māori-medium education may partly explain why these first language speakers have not generally been recognized as distinct from the “new speakers” who have been through the same education programmes.

7. Comparing conversational ability and first language While Figure 8 and Figure 11 above show different trends for these indicators in 2013, it is important to note that the percentage of sole first language (SFL) speakers in each cohort was considerably less than the percentage reporting conversational ability. This means that the first language trend may be effectively submerged in the much larger percentages reporting conversational ability.

The sample for Te Kupenga 2013 was based on the 2013 Census, and the resulting Te Kupenga data set allows the conversational ability response in the Census to be compared to the first language response in Te Kupenga for each individual respondent. Figure 11 shows the proportion of Māori with conversational ability in the 2013 census who reported Māori as their sole first language in Te Kupenga.

²⁸Māori-medium early childhood, primary (elementary), and secondary education organisations. Unfortunately Te Kupenga 2013 did not include a question about attendance at Māori-medium or bilingual units in predominantly English-medium schools, which means that the impact of such units cannot be assessed using Te Kupenga data.

²⁹*kura* ‘Māori-medium primary school’; *Kōhanga Reo* and *Puna Reo* are different Māori-medium early childhood organisations.

³⁰‘Māori-speaking extended families’.

Figure 11. Sole first language speakers of the Māori language in Te Kupenga 2013 as percentage of ethnic Māori in each birth cohort who reported conversational ability in the 2013 Census (Statistics New Zealand customized data)

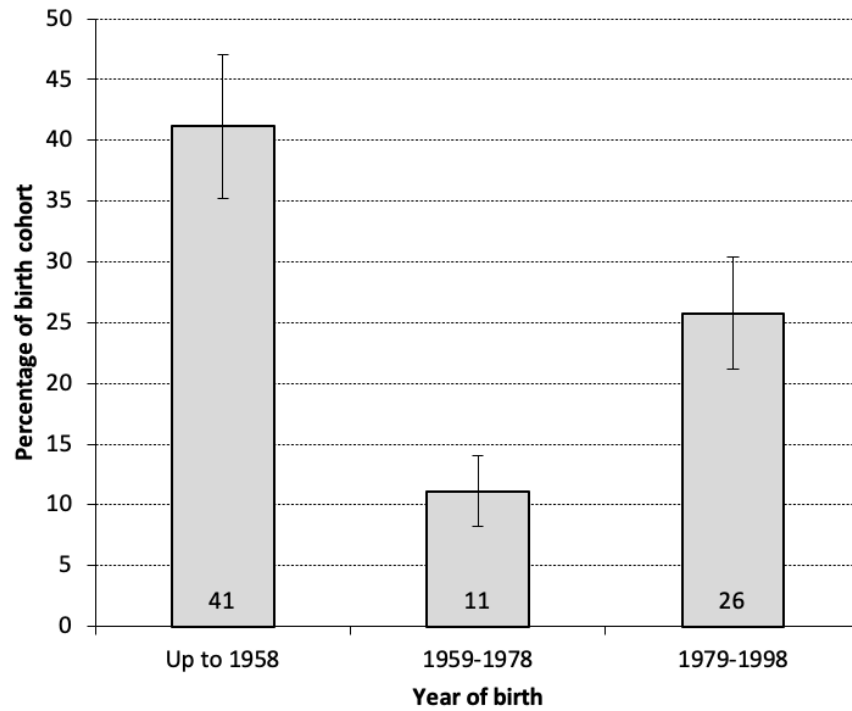


Figure 12 looks at the relationship between the two variables the other way around, in other words, it shows conversational ability as a percentage of the SFL and non-SFL groups in each cohort. Conversational ability responses varied by both first language and birth cohort, with opposing trends for those with and without Māori as sole first language. Particularly important is the smaller percentage of non-SFL speakers reporting conversational ability in the youngest cohort compared with the oldest and middle cohorts. While this looks like a small drop in the figure, the non-SFL group in the youngest cohort encompasses 74% of the cohort, and so this drop has a strong countervailing effect to the (possibly) higher rate of conversational ability reporting among sole first language speakers in this cohort: either there was a smaller proportion of proficient non-SFL speakers in this cohort, or those that there were less inclined than those in the older cohorts to report conversational ability.

8. Comparing speaking proficiency and first language Figure 13 shows the proportion of sole first language speakers of Māori among those who could speak Māori very well, well, or fairly well in each birth cohort in Te Kupenga 2013. Of the 38,000 ethnic Māori aged 15 and over who were sole first language speakers as estimated from Te Kupenga 2013, 73% (approximately 28,000) reported that they could speak

Figure 12. Ethnic Māori who reported conversational ability in the 2013 Census as percentage of those with and without Māori as their sole first language in each birth cohort (Te Kupenga 2013; Statistics New Zealand customized data)

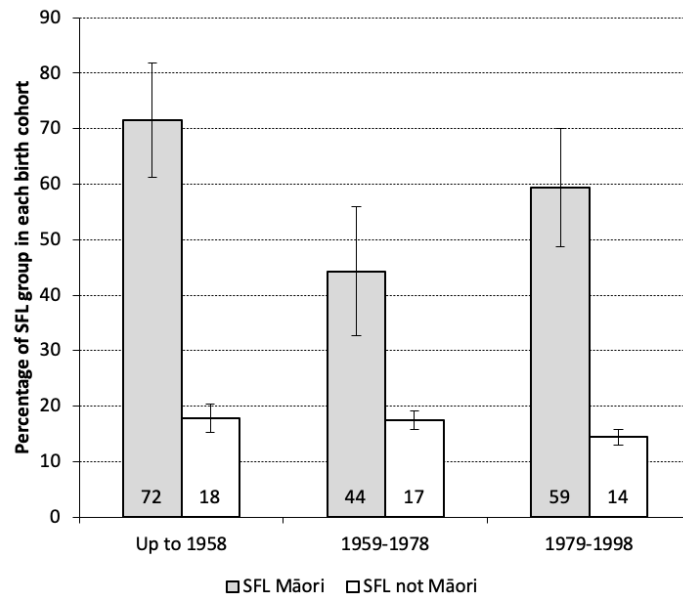
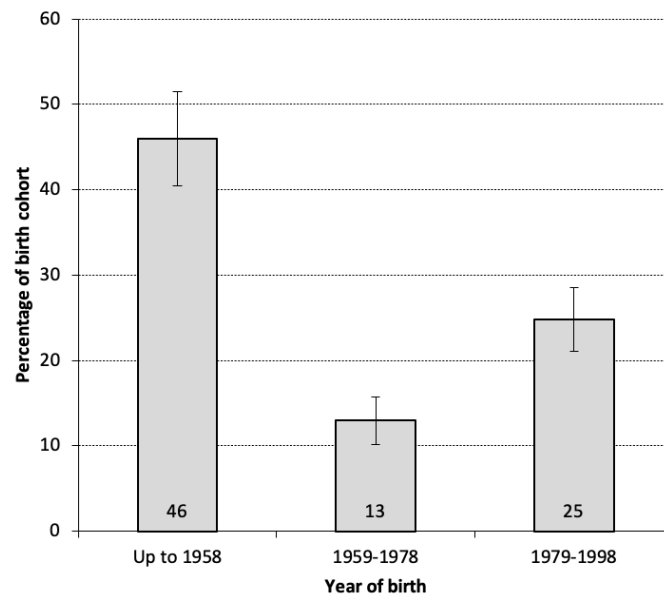


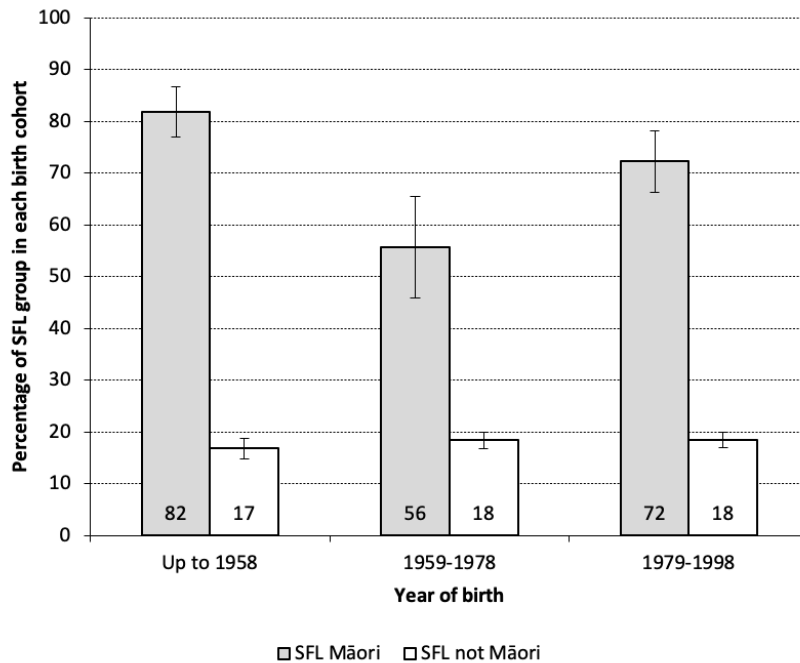
Figure 13. Sole first language speakers of the Māori language as percentage of ethnic Māori with higher speaking proficiency in the Māori language in each birth cohort (Te Kupenga 2013; Lane & Earle 2015:15)



Māori very well, well, or fairly well. Similarly, of the 90,000 estimated first language speakers in NZGSS 2016, 72% (65,000) reported higher speaking proficiency: 78% of sole first language speakers (29,000 out of 37,000), and 68% (36,000 out of 53,000) of multiple first language speakers.

Figure 14 shows that in each birth cohort in Te Kupenga, not all SFL speakers reported higher speaking proficiency as adults – for the oldest cohort the estimated proportion with higher speaking proficiency was 82%, for the middle cohort 56%, and for the youngest cohort 72%, a significant increase compared to the middle cohort. The proportion of non-SFL speakers with higher proficiency was more consistent across cohorts, between 17% and 18%.

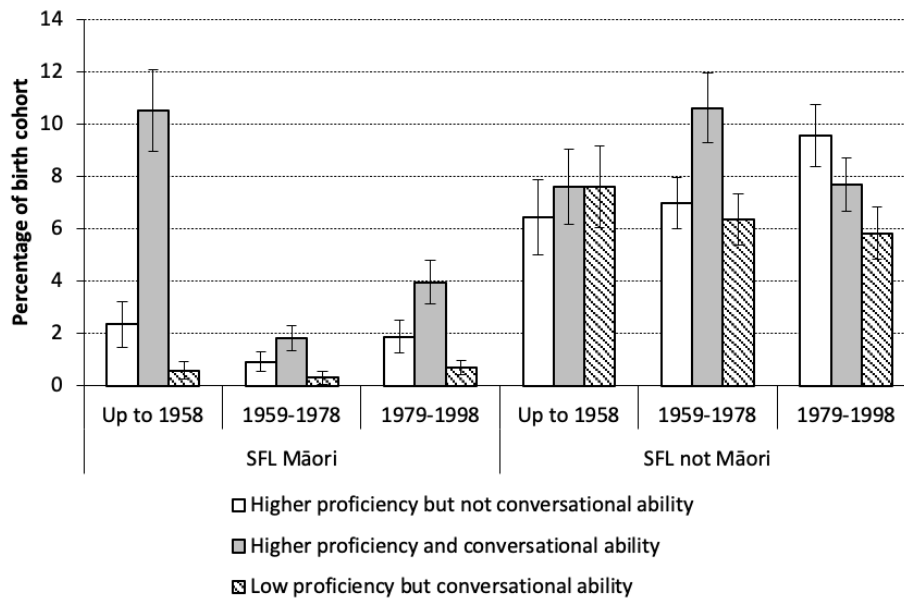
Figure 14. Ethnic Māori with higher speaking proficiency as percentage of those with and without Māori as sole first language in each birth cohort (Te Kupenga 2013; Lane & Earle 2015:15)



9. Comparing conversational ability, speaking proficiency, and first language Figure 12 above shows a significantly smaller percentage reporting conversational ability among non-SFL speakers in the youngest cohort in Te Kupenga 2013, but it does not indicate whether this represents a smaller proportion of proficient speakers in that cohort, or a greater reluctance among proficient non-SFL speakers in that cohort to report conversational ability. To clarify this issue we need to also consider speaking proficiency.

To illustrate the complex relationships between the three indicators of first language, conversational ability, and speaking proficiency, Figure 15 separates sole first language (SFL) speakers from non-SFL speakers, and for each of these groups, shows the proportions in each birth cohort falling into one of three subgroups: those reporting both conversational ability and higher speaking proficiency (aligned responses) and those reporting higher proficiency but not conversational ability, and those reporting conversational ability but low proficiency (non-aligned responses).

Figure 15. Percentage of ethnic Māori in three combinations of speaking proficiency in Te Kupenga 2013 and conversational ability in the 2013 Census, by sole first language and birth cohort (Statistics New Zealand customized data)



For sole first language speakers, there was consistency across the cohorts, and the percentage in the aligned subgroup in each cohort was significantly greater than in the non-aligned subgroups. For the non-SFL speakers there was a different pattern for each cohort, and only in the middle cohort did the percentage in the aligned subgroup exceed those in the non-aligned subgroups. Compared with the SFL speakers, among the non-SFL speakers the non-aligned subgroups were prominent. For the oldest and middle cohorts, the percentages in the two non-aligned groups were comparable, but in the youngest cohort the percentage in the subgroup with higher proficiency but not conversational ability was considerably greater than in the subgroup reporting conversational ability but low proficiency.

If we focus on the non-SFL group and compare the middle and youngest cohorts, there is a clear difference in how the two cohorts respond to the combination of speaking proficiency and conversational ability questions, with a larger proportion of the youngest cohort reporting higher proficiency but not conversational ability. This supports an interpretation of Figure 6 as indicating a greater reluctance to report con-

versational ability among proficient non-SFL speakers in the youngest cohort. This may be because they had a greater experience or awareness of first language speakers or highly proficient speakers in their own generation and hence a different standard for comparison of their own proficiency.

Figure 6 above shows a different pattern of responses to questions on conversational ability and speaking proficiency in the youngest cohort compared with the older cohorts, and suggests that conversational ability responses in particular are sensitive to context and consequently inconsistent and varying by cohort. To this variation can now be added variation according to first language.

10. Discussion The obvious way to use statistical indicators to track language revitalization might appear to be to compare the values of each indicator as estimated in surveys conducted at different times. In practice this is highly problematic, because of differences in the design and conduct of different surveys, in particular, differences in question wording, interview protocols, and interviewer selection. Statistics New Zealand (2014a:6–7, 15) cautions against making direct comparisons of Māori language statistics between HML 2001, HML 2006, and Te Kupenga 2013. It was noted above that comparisons of first language numbers between Te Kupenga 2013, ALL 2006, and PIAAC 2014 are also problematic, while PIAAC 2014 and NZGSS 2016 have compatible first language estimates in spite of some differences in question wording, because they have similar approaches to the issue of multiple first languages.

An advantage of using birth cohort analysis to study revitalization is that it compares indicators within rather than between surveys. Within a survey the parameters in terms of question wording, interview protocols, and so on are uniform across cohorts, so that comparisons between cohorts are more clear-cut, although as we have seen, different cohorts may interpret the same question in different ways. Cohort analysis also focuses directly on the process of generational change through which revitalization takes place.

However, the trend across birth cohorts within surveys is different for each of the three statistical indicators. Conversational ability appears to show a slowing decline, speaking proficiency a possible but uncertain revival, and first language a very distinct resurgence. These differences cannot reasonably be attributed to methodological inadequacies in the data collection or reporting procedures: the censuses and surveys examined here are statistically sound, being based on rigorous and exhaustively thorough procedures, and in particular, the surveys are based on sufficiently large samples to provide national-level population estimates. Furthermore, for each indicator, especially for first language, similar trends appear across different data sets, which reinforces the validity of the results even though the estimated total numbers of first language speakers vary considerably between data sets, depending on the extent to which the possibility of multiple first languages is allowed for in the survey designs (including question wording).

Cross-tabulations of the conversational ability and speaking proficiency indicators show that neither is as definitive as they might first seem. There is an approximate match between the two indicators, but a much weaker match for the youngest

cohort when compared with the older cohorts. Thus at least one of these two indicators is not interpreted consistently across cohorts. It is suggested here that the conversational ability indicator is particularly problematic: first of all because it is binary rather than multi-valued, secondly because of its wide range of interpretation, and thirdly because it has shown considerable sensitivity to context.

Statistics New Zealand (2014:16) states that the census language question provides the best time series for tracking numbers of speakers of Māori, on the basis that the same question is asked in each census in the same context:

2013 Census data is fully comparable with 2006 and 2001 Census data. No changes in the way the data has been collected, defined, and classified have occurred over this time period. [...]

We advise that the census is best used to give a time series about the number of speakers of day-to-day conversational Māori. However, the census is not clear what day-to-day conversational Māori means.

The censuses provide a reliable time series to the extent that the proportions of Māori who interpret the question as requiring high proficiency vs. low proficiency remain steady across censuses. But given that these proportions appear to be different for the middle and youngest cohorts, and between censuses the youngest cohort makes up a growing part of the Māori population, then the balance of interpretations may not be steady across censuses and the census question may not provide a reliable time series (unless cohort differences are taken into account).

In each of the three birth cohorts in Te Kupenga, SFL speakers made up a minority of those reporting conversational ability; in other words, conversational ability was to a considerable extent an indicator of non-SFL speakers' proficiency. The percentage of first language speakers was different in each cohort, indicating a decline then revival of first language acquisition.

Of the three statistical indicators, first language is the most direct indicator of the crucial factor of intergenerational language transmission. One might initially assume that first language speakers would be proficient adult speakers, but cross-tabulation with speaking proficiency (using the data from Te Kupenga 2013) indicates that for many sole first language speakers this is not the case; in particular, only slightly more than half of the SFL speakers in the middle cohort reported higher speaking proficiency as adults. SFL speakers in the youngest cohort were much more likely to report higher speaking proficiency, so that the youngest cohort not only has a greater percentage of SFL speakers, but a greater percentage of these SFL speakers reported higher speaking proficiency.

In Te Kupenga 2013, while SFL speakers in each birth cohort tended to report both higher speaking proficiency and conversational ability to a similar extent, non-SFL speakers with higher speaking proficiency in the youngest cohort appeared to be less inclined to report conversational ability than corresponding speakers in the older and middle cohorts. The context for responding to the conversational ability question may have been different for the youngest cohort in that they may have had greater experience and awareness of proficient first language speakers and other

highly proficient speakers in their cohort, and compared themselves to those models. The lower reporting of conversational ability by proficient non-SFL speakers in the youngest cohort appears to be the main explanation for the overall lower reporting of conversational ability in this cohort than in the middle cohort. Because there were more non-SFL than SFL speakers in the youngest cohort, the non-SFL pattern prevailed over that for SFL speakers even though there were more SFL speakers in the youngest than the middle cohort.

11. Conclusion Is it possible to tell from the three different statistical indicators (first language, conversational ability, and speaking proficiency) whether the language shift from Māori to English is undergoing reversal? Looking at the individual indicators the answer is not clear; but looking more carefully at how the indicators relate to each other, it is possible to conclude that yes, language shift is being reversed. There is evidence of a strong resurgence of intergenerational language transmission, at least in terms of early childhood acquisition; though many first language speakers have not been able to maintain proficiency in Māori into adulthood: it is a case of two steps forward and one step back. On the other hand, there is less of this attrition among the youngest cohort of first language speakers. The conversational ability indicator approximates the speaking proficiency indicator, but appears to be quite sensitive to context, and the context for the youngest cohort is different from that for the older cohorts: for the youngest cohort, the bar for claiming conversational ability seems to have effectively risen.

This picture is consistent with the findings of the New Zealand Council for Educational Research's project *Te Ahu o Te Reo*, which was designed as a follow-up to the NZCER survey of the 1970s (Hutchings et al. 2017).

This analysis indicates that a single statistical indicator on its own is not a good basis for analysing revitalization, whether it is an indicator of conversational ability, speaking proficiency, or first language. Particular sceptical attention needs to be given to the conversational ability indicator, which has been the main statistical indicator of Māori language revitalization over the past 20 years, and has been interpreted as indicating a continuing decline, but has provided little hint of the turnaround in intergenerational language transmission and the reversal of language shift under way. Analysing multiple indicators and how they interrelate provides an opportunity to investigate the real complexity of language revitalization and to approach a more nuanced understanding of it. Nevertheless, the statistical analysis merely provides clues to the different ways people can interpret and respond to language questions: it would also be useful to undertake qualitative studies to get a better understanding of those interpretations and responses.

A key conclusion is that different subgroups of Māori (birth cohorts, speakers of Māori as a first language or not) display different characteristics in terms of the three statistical indicators and may have different interpretations of the language questions. Analysing by these groups has shed light on the complexities of the language revital-

ization process. Other distinctions, such as gender³¹ and geographical region,³² are also likely to be important but their consideration is beyond the scope of this paper.

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³¹Age-related gender differences in conversational ability in census data have been analysed by Bauer (2008), but on initial examination of Te Kupenga 2013 data (Statistics New Zealand 2014d) it is unclear whether there was a significant gender difference in numbers of first language speakers, though there were clearly more women than men reporting higher speaking proficiency.

³²Considerable regional differences in percentages of ethnic Māori reporting Māori as their first language, and percentages reporting higher speaking proficiency, were reported from Te Kupenga 2013 (Statistics New Zealand 2014b: Table 6). Regional differences in percentages reporting conversational ability, and percentages reporting higher speaking proficiency from HML 2006, were reported in a series of regional reports by Te Puni Kōkiri (e.g., Te Puni Kōkiri 2009). The Māori sample sizes in the other surveys covered here are large enough to make national estimates but not large enough to make regional comparisons. However, Te Kupenga 2018 (Statistics New Zealand 2018) has been designed to collect a much larger sample (11,500) which should allow detailed regional analysis.

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